

What is claimed is:

Claim 1. A method for affixing a strip to an underlying substrate web comprising:

providing a substrate web having at least one surface;

applying at least one strip over a portion of the substrate web surface such that at least a significant portion of an underside surface of the strip disposed adjacent the substrate surface is substantially unbonded to the substrate web; and

extruding a polymer coating layer over the substrate and the strip such that the strip is affixed to the substrate surface by the coating layer and said portion of the underside surface of the strip remains substantially unbonded to the substrate surface while a substantial portion of an upper surface of the strip adjacent the polymer coating layer is bonded to the coating layer.

Claim 2. The method of Claim 1 wherein a plurality of strips are applied to the substrate surface and affixed thereto by the polymer coating layer extruded thereon.

Claim 3. The method of Claim 1 wherein the substrate web is selected the group consisting of a paper web, an oriented polymer film, a metal foil, a nonwoven fabric, and two or more thereof combined as a multi-ply web.

Claim 4. The method of Claim 1 wherein the strip material is selected from the group consisting of a paper web, an oriented polymer film, a metal foil, and a nonwoven fabric, and two or more thereof combined as a multi-ply web..

Claim 5. The method of Claim 1 wherein the extruded polymer coating comprises a polymer selected from the group consisting of low density polyethylene (LDPE), polyolefin plastomers (POP), polyolefin elastomers (POE), linear low density polyethylene (LLDPE), high density polyethylene (HDPE), polypropylene (PP), ethylene methyl acrylate copolymer (EMA), ethylene butyl acrylate copolymer (EnBA), ethylene vinyl

acetate copolymer (EVA), ethylene acrylic acid copolymer (EAA), ethylene methyl acrylic acid copolymer (EMAA), ionomers, ethylene vinyl alcohol (EVOH), polyesters such as polyethylene terephthalate (PET), polyamides (PA), and mixtures of two or more thereof.

Claim 6. The method of Claim 1 wherein the polymer coating comprises a coextrusion of at least two layers of polymer films.

Claim 7. The method of Claim 1 wherein the extruded polymer coating comprises a polymer selected from the group consisting of low density polyethylene (LDPE), polyolefin plastomers (POP), polyolefin elastomers (POE), linear low density polyethylene (LLDPE), high density polyethylene (HDPE), and mixtures of two or more thereof.

Claim 8. The method of Claim 1, wherein substantially the entire underside surface of the strip is substantially unbonded to the substrate surface wherein the strip is held in place between the coating and the substrate substantially only by the polymer coating extruded over the substrate and the strip.

Claim 9. The method of Claim 1, wherein the strip is substantially non-adherent to the substrate web so that the strip is held in place in an enclosed pocket formed by the presence of the strip between the extruded coating and the substrate surface.

Claim 10. The method of Claim 1, further comprising at least temporarily adhering at least a portion of the underside surface of the strip to the surface of the substrate to facilitate retention of the strip on the substrate surface for extrusion of the polymer coating over the strip and substrate.

Claim 11. The method of Claim 1, wherein the strip is applied to the substrate surface in advance of extruding the polymer coating layer over the strip and the substrate.

Claim 12. The method of Claim 1, wherein the strip is applied over the portion of the substrate surface by at least temporarily adhering the strip to the polymer coating prior the extruded coating making contact with the substrate.

Claim 13. The method of Claim 1, wherein the strip is applied as an elongate, substantially continuous web strip having a width substantially less than the width of the substrate web.

Claim 14. The method of Claim 1, wherein the step of applying the strip comprises applying a plurality of elongate, substantially continuous strips in side-by-side, spaced apart relation across at least a portion of the width of the web.

Claim 15. A method for making a reinforced packaging material comprising:  
providing an elongate substrate web having at least one surface;  
providing at least one reinforcement strip adjacent the surface of the substrate web; and

extruding a polymer coating over the substrate surface with the reinforcement strip sandwiched therebetween in order to cause the strip to be bonded to the coating and to be affixed to the substrate web surface by the coating without any substantial direct bonding between the substrate and an underside surface of the strip adjacent the surface of the substrate web.

Claim 16. The method of Claim 15 wherein a plurality of strips are provided adjacent the substrate surface and are affixed thereto by the polymer coating.

Claim 17. The method of Claim 16, wherein the plurality of strips include a plurality of elongate strips arranged generally linearly, one after the other, along the length of the substrate in spaced-apart relation.

Claim 18. The method of Claim 15, wherein the strip is sandwiched between the coating and the substrate surface by first applying the strip to the substrate surface before the coating is extruded over the substrate surface.

Claim 19. The method of Claim 15, wherein the strip is an elongate, substantially continuous web having a width substantially less than the width of the coating and the substrate so that side edges of the coating extend over and beyond side edges of the strip and are adhered to the substrate surface along interfacial areas between surfaces of the substrate and surfaces of the coating.

Claim 20. The method of Claim 15 wherein the substrate web is selected the group consisting of a paper web, an oriented polymer film, a metal foil, a nonwoven fabric, and two or more thereof combined as a multi-ply web.

Claim 21. The method of Claim 15 wherein the strip is selected the group consisting of a paper web, an oriented polymer film, a metal foil, a nonwoven fabric, and two or more thereof combined as a multi-ply web.

Claim 22. The method of Claim 15 wherein the polymeric coating comprises a polymer selected from the group consisting of low density polyethylene (LDPE), polyolefin plastomers (POP), polyolefin elastomers (POE), linear low density polyethylene (LLDPE), high density polyethylene (HDPE), polypropylene (PP), ethylene methyl acrylate copolymer (EMA), ethylene butyl acrylate copolymer (EnBA), ethylene vinyl acetate copolymer (EVA), ethylene acrylic acid copolymer (EAA), ethylene methyl acrylic acid copolymer (EMAA), ionomers, ethylene vinyl alcohol (EVOH), polyesters such as polyethylene terephthalate (PET), polyamides (PA), and mixtures of two or more thereof.

Claim 23. The method of Claim 15 wherein the polymer coating comprises a polymer selected from the group consisting of low density polyethylene (LDPE), polyolefin plastomers (POP), polyolefin elastomers (POE), linear low density polyethylene (LLDPE), high density polyethylene (HDPE), and mixtures of two or more thereof.

Claim 24. The method of Claim 15 wherein the polymer coating comprises a coextrusion of at least two layers of polymer films.

Claim 25. The method of Claim 15 further comprising forming the packaging material into ream wrap.

Claim 26. The method of Claim 15 further comprising forming the packaging material into insulation facing.

Claim 27. The method of Claim 15 further comprising forming the packaging material into a sandwich wrapper.

Claim 28. The method of claim 15 further comprising forming the packaging material into a coffee brick wrapper.

Claim 29. The method of Claim 15, further comprising temporarily adhering at least one reinforcement strip to the substrate web prior to the extrusion coating and removing the temporary adhesion between the strip and the substrate after the extrusion coating.

Claim 30. A reinforced web product comprising:  
a substrate web having at least one surface;

at least one strip disposed adjacent the substrate web surface such that at least a significant portion of an underside surface of the strip adjacent the substrate web surface is substantially unbonded to the substrate; and

a polymer coating layer extruded over the substrate surface and the strip such that the strip is affixed to the substrate surface by the coating layer and said portion of the underside surface of the strip adjacent the substrate web surface is substantially unbonded thereto while a substantial position of an upper surface of the strip adjacent the polymer coating layer is bonded to the coating layer.

Claim 31. The product of Claim 30 wherein a plurality of strips are disposed adjacent the substrate surface and are affixed thereto by the polymer coating.

Claim 32. The product of Claim 30 wherein the substrate web is selected from the group consisting of a paper web, a metal foil, an oriented polymer film, a nonwoven fabric, and two or more thereof combined as a multi-ply web.

Claim 33. The product of Claim 30 wherein the strip is selected from the group consisting of a paper web, an oriented polymer film, a metal foil, and a non-woven fabric.

Claim 34. The product of Claim 30 wherein the polymer coating layer comprises a polymer selected from the group consisting of low density polyethylene (LDPE), polyolefin plastomers (POP), polyolefin elastomers (POE), linear low density polyethylene (LLDPE), high density polyethylene (HDPE), polypropylene (PP), ethylene methyl acrylate copolymer (EMA), ethylene butyl acrylate copolymer (EnBA), ethylene vinyl acetate copolymer (EVA), ethylene acrylic acid copolymer (EAA), ethylene methyl acrylic acid copolymer (EMAA), ionomoers, ethylene vinyl alcohol (EVOH), polyesters such as polyethylene terephthalate (PET), polyamides (PA), and mixtures of two or more thereof.

Claim 35. The product of Claim 30 wherein the polymer coating is selected from the group consisting of low density polyethylene (LDPE), polyolefin plastomers (POP), polyolefin elastomers (POE), linear low density polyethylene (LLDPE), and high density polyethylene (HDPE), and mixtures of two or more thereof.

Claim 36. The product of Claim 30 wherein the polymer coating comprises a coextrusion of at least two layers of polymer films.

Claim 37. A method for affixing a strip to an underlying substrate web comprising:

providing a substrate web;

applying at least one strip over a portion of the substrate web surface and temporarily adhering an underside surface of the strip thereto;

extruding a polymer coating layer over the substrate and the strip such that the strip is affixed to the substrate surface by the coating layer and a substantial portion of an upper surface of the strip adjacent the polymer coating layer is bonded to the coating layer; and

removing the temporary adhesion between the strip underside and the substrate so that the strip underside is substantially unbonded to the substrate surface.

Claim 38. The method of Claim 37 wherein a plurality of strips are applied to the substrate surface and affixed thereto by the polymer coating layer extruded thereon.

Claim 39. The method of Claim 37 wherein the substrate web is selected the group consisting of a paper web, a metal foil, an oriented polymer film, a nonwoven fabric, and two or more thereof combined as a multi-ply web.

Claim 40. The method of Claim 37 wherein the strip material is selected from the group consisting of a paper web, an oriented polymer film, a metal foil, and a nonwoven fabric, and two or more thereof combined as a multi-ply web..

Claim 41. The method of Claim 37 wherein the extruded polymer coating comprises a polymer selected from the group consisting of low density polyethylene (LDPE), polyolefin plastomers (POP), polyolefin elastomers (POE), linear low density polyethylene (LLDPE), high density polyethylene (HDPE), polypropylene (PP), ethylene methyl acrylate copolymer (EMA), ethylene butyl acrylate copolymer (EnBA), ethylene vinyl acetate copolymer (EVA), ethylene acrylic acid copolymer (EAA), ethylene methyl acrylic acid copolymer (EMAA), ionomoers, ethylene vinyl alcohol (EVOH), polyesters such as polyethylene terephthalate (PET), polyamides (PA), and mixtures of two or more thereof.

Claim 42. The method of Claim 37 wherein the extruded polymer coating comprises a polymer selected from the group consisting of low density polyethylene (LDPE), polyolefin plastomers (POP), polyolefin elastomers (POE), linear low density polyethylene (LLDPE), high density polyethylene (HDPE), and mixtures of two or more thereof.

Claim 43. The method of Claim 37 wherein the polymer coating comprises a coextrusion of at least two layers of polymer films.